

**AMENDMENTS TO THE DRAWINGS**

The replacement drawing sheets (Nos. 1-22) presented in Attachment A include Figures 1-30. Figures 1, 9, 11, 15, 17, 19, 21, 24, 26, 28 and 30 have been amended to include descriptive labels. Figures 3, 7, 18(b), 23(a) and 28 have been amended to include feature lines. Figure 7(b) has been amended to reflect the correct figure reference number. No new matter has been added.

The replacement sheets (Nos. 1-22) replace all previous drawing sheets.

**Attachment A:**        Figures 1-30







**Rejection Under 35 USC §103**

Claims 3 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wirtz in view of U.S. Patent No. 5,751,856 to Hirabayashi et al. ("Hirabayashi"). The Examiner contends that Wirtz discloses most of the features of the claimed invention. However, the Examiner acknowledges that Wirtz does not disclose compressing each orthogonally-transformed evaluation vector to reduce the amount of processing needed. The Examiner relies on Hirabayashi as disclosing an image compression method in which the high frequencies of the image are masked so that the energy from the orthogonally-transformed image data is concentrated in the low frequency band, thereby reducing the number of data items. See, Hirabayashi, col. 1, lines 26-49. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz and Hirabayashi to achieve the claimed invention.

With respect to the rejection of claim 19, Applicants have amended independent claim 19 to recite:

a template image processing part operable to input a template image and calculate an edge normal direction vector of said template image, normalize said edge normal direction vector of said template image, generate an evaluation vector from said normalized edge normal direction vector.

As discussed above with respect to claims 1 and 2, Wirtz does not disclose normalizing the edge normal direction vector and generating an evaluation vector based on the normalized edge normal direction vector. Furthermore, Applicants submit that Hirabayashi neither discloses, nor suggests, normalizing the edge normal direction vector, or generating an evaluation vector based on the normalized edge normal direction vector. Therefore, the



Claim 4 depends from claim 2. Accordingly, Applicants submit that claim 4 is patentable for at least the same reasons as discussed above with respect to claim 2. Thus, the combination of Wirtz, Hirabayashi, and Thebaud does not disclose or suggest the invention of claim 4. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 4. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 5 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz in view of U.S. Patent No. 5,905,807 to Kado et al. (“Kado”). The Examiner acknowledges that Wirtz does not disclose normalizing the evaluation vector with respect to a vector length. However, the Examiner cites Kado, col. 5, lines 1-16; col. 5, lines 21-33; and col. 6, lines 5-12, and contends that Kado discloses normalizing and converting edge vectors extracted from an input facial image into either unit vectors or zero vectors, processing positive and negative signs of the unit vectors. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz and Kado to achieve the claimed invention.

Applicants submit that Kado does not disclose or suggest “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz, as discussed above with respect to independent claim 2.

Furthermore, with respect to the rejection of claim 14, Applicants submit that Kado does not disclose “generating an evaluation vector of a bilaterally symmetrical image with respect to said original template image, by which said generated evaluation vector is applied to said product sum calculation,” as recited in claim 14. In contrast, Kado discloses that the gradient vectors are multiplied by (-1) so as to be directed towards the center of the circle. See, Kado, col. 1, lines 52-58. Additionally, Kado merely discloses that searching for the symmetrically features of a facial shape is the easiest way to determine if the image is a facial image, but does not disclose or suggest “generating an evaluation vector of the bilaterally symmetrical image with respect to said original template image,” as recited in claim 14. See, Kado, col. 8, lines 19-30.

Claims 5 and 14 depend from claim 2. Applicants submit that claims 5 and 14 are patentable for at least the same reasons as discussed above with respect to claim 2. Thus, the combination of Wirtz and Kado does not disclose or suggest the invention of claims 5 and 14. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claims 5 and 14. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz in view of U.S. Patent No. 6,278,791 to Honsinger et al. (“Honsinger”). The Examiner acknowledges that Wirtz does not disclose using the complex conjugate properties of orthogonal transformation to reduce the amount of data performed in the product sum calculation, and then restoring the data after performing the product sum calculation. However, the Examiner cites



Honsinger, col. 10, lines 52-63, and contends that Honsinger discloses using the conjugate symmetry properties of the Fourier transform to halve the amount of data needed. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz and Honsinger to achieve the claimed invention.

Applicants submit that Honsinger neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz, as discussed above with respect to independent claim 2.

Claim 7 depends from claim 2. Accordingly, Applicants submit that claim 7 is patentable for at least the same reasons as discussed above with respect to claim 2. Thus, the combination of Wirtz and Honsinger does not disclose or suggest the invention of claim 7. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 7. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 10 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz in view of U.S. Patent No. 5,781,650 to Lobo et al. (“Lobo”). The Examiner acknowledges that Wirtz does not disclose that the template image is an image of a typified face. However, the Examiner cites Lobo, col. 4, lines 44-49 and col. 4, line 64 through col. 5, line 48, and contends that Lobo discloses a process for automatically finding facial images of a human face in digital images. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz and Lobo to achieve the claimed invention.

Applicants submit that Lobo neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz, as discussed above with respect to independent claim 2.

Claim 10 depends from claim 2. Accordingly, Applicants submit that claim 10 is patentable for at least the same reasons as discussed above with respect to claim 2. Thus, the combination of Wirtz and Lobo does not disclose or suggest the invention of claim 10. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 10. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 17 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz and Lobo in view of the non-patent literature entitled *Digital Image Watermarking on a Psocial Object: the Human Face* by Oh et al. (“Oh”). The Examiner acknowledges that neither Wirtz nor Lobo disclose extracting a face from the image and embedding a digital watermark in the face image. However, the Examiner cites Oh, page 538, and contends that Oh discloses a method for watermarking face regions that are segmented out as a result of face detection, and then overlaying the watermarked face regions on the original image at the same position. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Lobo, and Oh to achieve the claimed invention.





direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz and Hirabayashi, as discussed above with respect to claims 4 and 19.

Claim 20 depends from claim 19. Accordingly, Applicants submit that claim 20 is patentable for at least the same reasons as discussed above with respect to claim 19. Thus, the combination of Wirtz, Hirabayashi, and Thebaud does not disclose or suggest the invention of claim 20. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 20. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 21 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz, Hirabayashi, and Thebaud in view of U.S. Patent No. 5,535,288 to Chen et al. (“Chen”). The Examiner acknowledges that Wirtz, Hirabayashi, and Thebaud do not disclose a conjugate compression unit located between the recording unit and multiplication unit, and a conjugate restoring unit located between the multiplication unit and the inverse orthogonal transformation unit. However, the Examiner cites Chen, col. 9, lines 34-53 and col. 10, lines 4-11, and contends that Chen discloses a method of using Discrete Fourier Transforms (DFTs) to reduce the amount of data being multiplied, and using Inverse DFTs to restore the data. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Hirabayashi, Thebaud, and Chen to achieve the claimed invention.

Applicants submit that Chen neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal



combination of Wirtz, Hirabayashi, Thebaud, and Kado does not disclose or suggest the invention of claim 27. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 27. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 30 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz and Hirabayashi in view of Oh. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Hirabayashi, and Oh to achieve the claimed invention.

As discussed above with respect to claim 17, Applicants submit that Oh neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector.” These features were demonstrated to be missing from Wirtz and Hirabayashi, as discussed above with respect to claims 2 and 19.

Claim 30 depends from claim 19. Accordingly, Applicants submit that claim 30 is patentable for at least the same reasons as discussed above with respect to claim 19. Thus, the combination of Wirtz, Hirabayashi, and Oh does not disclose or suggest the invention of claim 30. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 30. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 31 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz and Hirabayashi in view of Lawton. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Hirabayashi, and Lawton to achieve the claimed invention.

As discussed above with respect to claim 18, Applicants submit that Lawton neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector.” These features were demonstrated to be missing from Wirtz and Hirabayashi, as discussed above with respect to claims 2 and 19.

Claim 31 depends from claim 19. Accordingly, Applicants submit that claim 31 is patentable for at least the same reasons as discussed above with respect to claim 19. Thus, the combination of Wirtz, Hirabayashi, and Lawton does not disclose or suggest the invention of claim 31. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 31. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 32-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz and Lobo in view of U.S. Patent No. 6,529,630 to Kinjo and further in view of U.S. Patent Publication 2001/0014182 to Funayama et al. (“Funayama”). The Examiner acknowledges that Wirtz and Lobo neither disclose nor suggest extracting the face image, calculating a feature that corrects the face image, determining a correction function on the basis of the feature, and





**CONCLUSION**

Each and every point raised in the Office Action dated November 15, 2005 has been addressed on the basis of the above amendments and remarks. In view of the foregoing it is believed that claims 1-35 are in condition for allowance and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

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Respectfully submitted

By 

Richard J. Katz

Registration No.: 47,698

DARBY & DARBY P.C.

P.O. Box 5257

New York, New York 10150-5257

(212) 527-7700

(212) 527-7701 (Fax)

Attorneys/Agents For Applicant